



General Comments

Minor comments are described in more detail below for both the Fall 2011 and the Fall 2012 survey efforts. In general, the surveys appear to have been completed according to the procedures outlined in the QAPP. Comments, questions and requests have been raised below in order to facilitate clarification of procedures and quantification/interpretation of system performance. Multiple, redundant system checks and calibrations were completed and documented to ensure data quality objectives were achieved. The comments described below are in regards to handling of the data following surveying and data post processing activities.

Specific Comments - Fall 2011 Passaic Bathy Survey

GBA Multi-beam Report

1. Section 2.0 Survey Setup and Control: Please provide the measured and reported control point coordinates from the day(s) on which control point surveying was completed (day before patch/performance test)?
2. Section 4.0 Data Processing and Collection: Please described the automatic filters that were applied to the sounding data during processing?
3. Section 5.0 QA/QC, Performance Tests: Please provide the text file results (e.g. anglestest.txt) from the performance tests.
4. Section 5.0 QA/QC, Performance Tests: Where were the performance test surfaces collected? Is this the same as all previous surveys? If not, why was the location changed?
5. Section 5.0 QA/QC, Performance Tests: At what location was the 2011 patch/performance testing completed – lower Newark Bay? Upper NB? Was this the same as previous years?
6. Attachment 1, Appendix 4: Please clarify what the daily boat positioning measurements refer to on the daily report summary sheet (page 1 of each day's notes). Is it simply a blunder check when the boat is tied up at the dock?
7. Attachment 1, Appendix 4: Was the same reference surface used for beginning, mid and end performance tests? Or was a new reference surface created each time a performance test was completed? The same reference surface should be used for each performance test.
 - a. Appears that a new reference surface was measured on 11/5/2011
 - i. 20 reference lines were driven on 10/5/2011 (GBA notes, Attachment 4)
 - ii. 23 reference lines were driven on 10/23/2011 (during re-calibration)
 - iii. 35 reference lines were driven on 11/5/2011
 - iv. 21 reference lines were driven on 11/10/2011.
8. Section 5.0 QA/QC, Single Beam Cross-check Lines: Please quantify how the single-beam data compared to the multi-beam data in overlap areas? It is difficult to quantify from the plot(s).
9. Please provide the numerical results of the bar checks for single-beam and multi-beam (measured vs. known).
10. Attachment 1, Appendices 2c and 3: It is unclear which direction the transects are being shown



(e.g. facing upstream/downstream, right bank to left bank?). And, can this be noted in the drawings?

11. Were any data from beam angles larger than 45 degrees used in the final dataset at any point in the river as done in the past?



Specific Comments - Fall 2012 Passaic Bathy Survey

AECOM Report

1. Section 1.0 Overview: In the statement "The 2012 single beam survey was conducted of nine areas with water depths less than 6 feet outside the limits of the multi-beam surveys (Figure 2 and Figure 3)."
 - a. Report(s) should remain consistent with definition of water depth vs datum elevation. Elevation is preferred (instead of depth) because it is not dependent upon a fluctuating tide.

GBA Multi-beam Report

2. Section 3.0 Bathymetry Survey, Multibeam Survey: "90-deg was primarily used"...When was the 90-deg limitation on beam angle lifted and were data from beam angles greater than 45-deg to the side used in the final dataset at any point?
3. Section 3.0 Bathymetry Survey, Single Beam Equipment: the single beam transducer is a dual frequency sonar: Has GBA ever evaluated the low frequency data for comparison to the high frequency sonar? Does it indicate anything about the subsurface?
4. Section 4.0 Data Processing: 100% overlap is not the same as 100% bottom coverage (100% overlap is actually 200% bottom coverage). Please clarify what was targeted and why 100% bottom coverage was not possible even if it required additional survey time.
5. Section 4.0 Data Processing: what were the statistical filters applied?
6. Section 5.0 QA/QC: What wasn't a bar check completed each day for the multi-beam sonar like the single-beam sonar?
7. Section 5.0 QA/QC, Performance Tests: Was the performance test *reference surface* the same for all performance tests? If so, on which day was the reference surface collected?
8. Section 5.0 QA/QC, Performance Tests: Where were the performance test surfaces collected? Is this the same as all previous surveys? If not, why was the location changed?
9. Attachment 1, Appendix 3: What is the explanation for the spiking in the data at RM 2.0? Is the same signature seen in the multi-beam data from the same coordinates to verify the data?
10. Attachment 1, Appendix 4: On 9 Sept 2012, page 4 of 11, when "diff" is noted in the HDOP column, does that indicate the GPS was operating in differential mode (not RTK)? And, were those data ultimately kept or discarded? What was the criteria to keep/discard?
11. Please provide the numerical results of the bar checks for single-beam and multi-beam (measured vs. known).



GBA Single-beam Report

12. Section 3.0 Single Beam Survey, Survey Equipment: Since two single-beam echosounders were utilized (CV 100 and the Mark II), were any inter-comparisons done between systems prior to surveying to evaluate performance?
13. Section 5.0 QA/QC, Sound Velocity Profiles: It appears that the same sound velocity profiler calibration plot is being shown for the Fall 2012 multi-beam survey, Fall 2012 single-beam survey, Fall 2011 multibeam survey and Summer 2011 (RM 10.9) survey.
 - a. Please clarify since the text indicates that the SV profiler was calibrated prior to each survey
 - b. Was the same SV profiler used for the Fall 2012 single-beam and multi-beam surveys?
 - i. If so, how was that possible if the two surveys were occurring simultaneously?
 - ii. If not, were both SV profilers calibrated prior to the surveys?
14. Section 5.0 QA/QC, Final QA Verification: Please quantify how the single-beam data compared to the multi-beam data in overlap areas?
15. Please list the results of the latency tests for the single-beam vessel.
16. Attachment 2, Appendix 2: The handwritten notes contain the word 'Questionable' frequently. Please clarify what that pertained to: gps coverage?
17. Attachment 2, Appendix 2: What does Q/A mean in the notes?
18. Attachment 2, Appendix 2: Why were pole soundings used in the field notes?
19. Attachment 2, Appendix 2: The HDOP on the single-beam vessel (as high as 3-5) was frequently larger than that reported on the multi-beam vessel (typically less than 2).
 - a. Was this due to poor sky visibility?
 - b. Were these lines still used? If so, what was the criteria by which they were kept or omitted?
20. Please provide the numerical results of the bar checks for single-beam (measured vs. known).

Respectfully submitted,

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